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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,950	11/25/2003	Weizhong Chen	SC12785TH	5868

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EXAMINER	
WILLIAMS, LAWRENCE B	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,950	CHEN ET AL.	
	Examiner	Art Unit	
	Lawrence B. Williams	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,11-13,15-19,27,28 and 30-33* is/are rejected.

7)☒ Claim(s) *4-10,14,20-26 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the examiner suggest applicant replace the word "peal" with "peak" in paragraph [004], line 3.

Appropriate correction is required.

Claim Objections

2. Claim 4 is objected to because of the following informalities: The examiner suggests applicant replace the word "plurality" with " plurality of sample position" for clarity.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 11-13, 15-19, 27-28, 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (US 2004/0101068 A1).

(1) With regard to claim 1, Wang et al. discloses in Fig. 3, a method for generating a timing signal in a communication receiver, the method comprising: generating a correlated signal from a received signal (Fig. 2, received signal I, Q, Barker Code Correlator); deriving phase

information of the correlated signal (signal from Barker Code Correlator to PFD to obtain information concerning phase/frequency mismatch and generate an instantaneous phase/frequency error signal; col. 3, paragraph [0020]); and generating a timing signal using the phase information (pg. 3, paragraphs [0020, 0023], Wang et al. discloses the instantaneous phase/frequency error signal output from the PFD coupled to the NCO which outputs a signal used to control the interpolator via frequency timing locking circuit 315). Thus the phase information is used to generate a timing signal).

(2) With regard to claim 2, Wang et al also discloses the method of claim 1, wherein the generating the correlated signal further includes correlating the received signal with a standard barker symbol. Wang et al. discloses a Barker Code Correlator, Fig. 2, element 207).

(3) With regard to claim 3, Wang et al. also discloses the method of claim 1 wherein: the deriving the phase information includes generating a phase error signal of the correlated signal (signal from Barker Code Correlator to PFD to obtain information concerning phase/frequency mismatch and generate an instantaneous phase/frequency error signal; col. 3, paragraph [0020]); the generating the timing signal includes using the phase error signal to generate the timing signal (pg. 3, paragraphs [0020, 0023], Wang et al. discloses the instantaneous phase/frequency error signal output from the PFD coupled to the NCO which outputs a signal used to control the interpolator via frequency timing locking circuit 315). Thus the phase information is used to generate a timing signal).

(4) With regard to claim 11, Wang et al. also discloses the method of claim 1 further comprising generating a carrier error signal using the phase information (pg. 3, paragraph [0020],

Wang et al. discloses carrier frequency offset (carrier error) modeled as a time-varying phase. The average phase error signal also functions as a carrier error signal.

(5) With regard to claim 12, Wang et al. also discloses the method of claim 11 further comprising correcting errors in the received signal due to differences in a receiver oscillator versus a transmitting oscillator using the carrier error signal (pg. 3, paragraphs [0019-0020]).

(6) With regard to claim 13, Wang et al. also discloses the method of claim 1 wherein the timing signal is indicative of a symbol boundary in a synchronization pattern of a data packet of the received signal (pg. 3, paragraph 0023]). Wang et al. discloses the instantaneous phase/frequency error signal output from the PFD coupled to the NCO which outputs a signal used to control the interpolator via frequency timing locking circuit 315). The purpose of this is a cited in the beginning lines of this paragraph, "obtain symbol synchronization". It would be inherent to one skilled in the art that symbol synchronization would be achieved by determining symbol boundaries in a synchronization pattern of the data.

(7) With regard to claim 15, Wang et al. also discloses the method of claim 1 wherein data is encoded in the received signal as per the WLAN 802.11 wireless protocol (pg. 1, paragraph [002-0003], Wang et al. uses the IEEE 802.11a WLAN standard).

(8) With regard to claim 16, Wang et al. also discloses in Fig. 3, a communication receiver comprising: means for generating a correlated signal from a received signal (Barker Code Correlator, 207); means for generating a phase error signal from the correlated signal (PFD, 301, col. 3, paragraph [0020]); means for generating a timing signal from the phase error signal (loop filter, 312 in conjunction with timing frequency locking circuit, 315; Wang et al. discloses the instantaneous phase/frequency error signal output from the PFD coupled to the

NCO which outputs a signal used to control the interpolator via frequency timing locking circuit 315 the phase information is used to generate a timing signal).

(9) With regard to claim 17, Wang et al. also discloses the communication receiver of claim 16, wherein the means for generating the timing signal further includes means for generating a carrier error signal (pg. 3, paragraph [0020], Wang et al. teaches carrier frequency offset modeled as a time-varying phase. The average phase error signal also functions as a carrier error signal).

(10) With regard to claim 18, Wang et al. also discloses a timing detector for a communication receiver, the timing detector comprising: a correlator coupled to receive a received signal, the correlator correlating the received signal to produce a correlated signal (Fig. 2, received signal I, Q, to Barker Code Correlator, 207); a phase information module coupled to receive the correlated signal, the phase information module deriving phase information of the correlated signal (PFD, 301, deriving information concerning phase/frequency mismatch, pg. 3, paragraph [0020]); a timing signal module (elements, 302, 313, 315) coupled to receive the phase information, the timing signal module providing a timing signal, the timing signal module generating the timing signal using the phase information (pg. 3, paragraph [0023]).

(11) With regard to claim 19, Wang et al. also discloses the timing detector of claim 18 wherein the phase information includes a phase error signal of the correlated signal, wherein the timing signal module generates the timing signal using the phase error signal (pg. 3, paragraphs [0020, 0023]).

(12) With regard to claim 27, Wang et al. also discloses the timing detector of claim 18, wherein the timing module generates a carrier error signal using the phase information (the

instantaneous phase/frequency error signal derived from information concerning phase/frequency mismatch is also used to indicate a carrier frequency offset/carrier error (pg. 3, paragraph [0020]).

(13) With regard to claim 28, Wang et al. also discloses the timing detector of claim 18, wherein the timing signal is indicative of a symbol boundary in a synchronization pattern of a data packet of a received signal (pg. 3, paragraph 0023]). Wang et al. discloses the instantaneous phase/frequency error signal output from the PFD coupled to the NCO which outputs a signal used to control the interpolator via frequency timing locking circuit 315). The purpose of this is a cited in the beginning lines of this paragraph, "obtain symbol synchronization". It would be inherent to one skilled in the art that symbol synchronization would be achieved by determining symbol boundaries in a synchronization pattern of the data.

(14) With regard to claim 30, Wang et al. also discloses a communication receiver including the timing detector of claim 18, the communication receiver further including a timing carrier correction module (derotator, 101) coupled to receive the timing signal (signal from NCO, 315) and coupled to receive the received signal (derotator coupled to received signal (I, Q) via interpolator, 202 and A/D). Wang et al. teaches the adjustment of carrier frequency (carrier correction) via rotator, 101).

(15) With regard to claim 31, Wang et al. also discloses the communication receiver of claim 30 wherein: the timing signal module (elements 302, 313, 315) generates a carrier error signal using the phase information (Wang et al. teaches carrier frequency offset (carrier error) modeled as a time-varying phase. The phase/frequency error signal derived from phase information concerning a phase/frequency mismatch also function as a carrier error signal); the

timing correction module is coupled to receive the carrier error signal. As shown in Fig. 2, the phase/frequency error signal is coupled to element 301, the timing signal module.

(16) With regard to claim 32, though Wang et al. is silent as to antenna, an antenna coupled to incoming received signal (I, Q) would be an inherent feature since Wang et al. teaches the invention in a wireless local area network (pg. 1, paragraph [0002]). Fig. 2 discloses the carrier correction module (derotator, 101) and the timing detector (correlator, 207, PFD, 301, Loop filter 302, NCO, 313, Timing Frequency Locking Circuit, 315 coupled to receive the received signal.

(17) With regard to claim 33, Wang et al. also discloses the timing detector of claim 18, wherein data is encoded in the received signal as per the WLAN 802.11 wireless protocol (pg. 1, paragraph [002-0003], Wang et al. uses the IEEE 802.11a WLAN standard).

Allowable Subject Matter

5. Claims 4-10, 14, 20-26, 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Walton et al. discloses in US 2006/0274820 A1 Receiver For Wireless Communication Network With Extended Range.

b.) Steele et al. discloses in US Patent 7,161,996 B1 Multi-Antenna Wireless Receiver Chains With Vector Decoding.

c.) Vanderperren et al. discloses in US 2004/0076246 A1 Methods and apparatus For Synchronization of Training Sequences.

d.) Rasmussen discloses in US 2007/0025430 A1 Enhanced QPSK or DQSPK Data Demodulation For Direct Sequence Spreading (DSS) System Waveforms Using Orthogonal or Near-Orthogonal Spreading Sequences.

e.) Troya et al. discloses in US 2006/0165187 A1 Multiplex Signal Error Correction Method and Device.

f.) Rypinski et al. discloses in US Patent 5,388,126 Baseband Signal Processor For A Microwave Radio Receiver.

g.) Poston et al. discloses in US Patent 4,518,947 Apparatus For Decoding Redundant Interleaved Data.

h.) Tsubouchi et al. discloses in US Patent 6,865,174 B1 Code Division Multiple Access Communication System.

i.) Sawahashi et al. discloses in US Patent 5,898,665 Coherent Tracking Apparatus And Method For CDMA Receiver.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw

June 18, 2007

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER